

## BACKGROUND

Manual blood grouping is performed in our blood center in various scenarios for donors like at voluntary blood donation camps and during blood group confirmation of indoor blood/ platelet donors as well as in the red cell serology lab during final blood group confirmation prior to issue by testing of sample from donor unit segment and at all times at patients' bedside as a part of bedside blood administration protocol. Slide method is prone to human error and inaccurate results which can cause substantial delay in the process involved.

## AIMS

To evaluate the sensitivity, specificity, precision and accuracy of the ABD PAD system for blood group testing of donors and recipients.

## METHODOLOGY

Immucor Neo results and Ortho Vision results were considered as standard reference results for donor and recipient blood group testing respectively. Total 396 donor samples and 360 recipient samples were tested. 47 Rh (D) negative samples, five samples with weaker sub-groups and two with positive Direct Antiglobulin Test (DAT) were included in the evaluation exercise for donor samples. The recipient samples included 36 Rh (D) negative, two variants of D antigen, two DAT positive samples, two samples from patients on Daratumumab therapy, 10 samples of ABO nonidentical BMT patients in various phases of transplant, two samples of patients with multiple alloantibodies and two samples of patients with diagnosed Autoimmune Hemolytic Anemia (AIHA). Five samples each with hemolysis and lipemic appearance were included in evaluation exercise. Two senior technical officers independently interpreted the results of the blood group tests. All samples were tested within seven days of their collection and were stored at 2-6 degree Celsius.

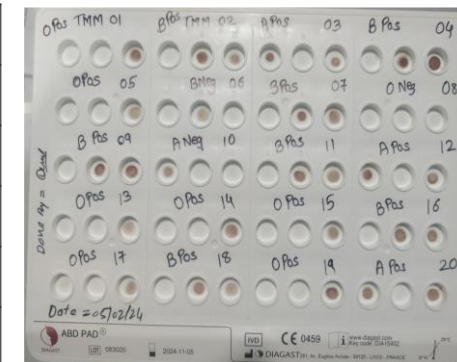
## RESULTS

Precision of the test and accuracy of the results could be well established and were found to be 100%. The technologists could be trained very easily, and the test could be completed within less than five minutes.

Table 1: Donor Blood Group Testing with ABD PAD  
(N=396)

| Sample Type                                     | Results Obtained with ABD PAD | Results Obtained with Neo Iris System |
|-------------------------------------------------|-------------------------------|---------------------------------------|
| 1) Rh Negative Samples (N=47)                   | Concordant Results Obtained   | Concordant Results Obtained           |
| 2) Sub Group of 'A' (N=04)                      | Concordant Results Obtained   | Concordant Results Obtained           |
| 3) Sub Group of 'B' (N=01)                      | Concordant Results Obtained   | Concordant Results Obtained           |
| 4) Sample with Positive DAT results (N=02)      | Concordant Results Obtained   | Concordant Results Obtained           |
| 5) Routine Donor Blood Grouping samples (N=342) | Concordant Results Obtained   | Concordant Results Obtained           |

Picture1: ABD PAD



**Table 2: Patient Blood Group Testing with ABD PAD (N=360)**

| Sample Type                                                        | Results Obtained with ABD PAD | Results Obtained with Ortho Vision System |
|--------------------------------------------------------------------|-------------------------------|-------------------------------------------|
| 1)Rh D Negative samples (N=36)                                     | Concordant Results Obtained   | Concordant Results Obtained               |
| 2)Variant of D antigen (N=02)                                      | Concordant Results Obtained   | Concordant Results Obtained               |
| 3) Positive DAT results (N=02)                                     | Concordant Results Obtained   | Concordant Results Obtained               |
| 4)Patient on daratumumab therapy (N=02)                            | Concordant Results Obtained   | Concordant Results Obtained               |
| 5)Patient samples with multiple alloantibodies (N=02)              | Concordant Results Obtained   | Concordant Results Obtained               |
| 6)Patient samples diagnosed with AIHA (N=02)                       | Concordant Results Obtained   | Concordant Results Obtained               |
| 7)ABO Non-identical BMT Patient's in various phases samples (N=10) | Concordant Results Obtained   | Concordant Results Obtained               |
| 8) Samples with hemolysis (N=05)                                   | Concordant Results Obtained   | Concordant Results Obtained               |
| 9)Samples with lipaemic appearance (N=05)                          | Concordant Results Obtained   | Concordant Results Obtained               |
| 10) Routine Patient Blood Grouping samples                         | Concordant Results Obtained*  | Concordant Results Obtained*              |

\* In the patient testing scenario, one sample showed an additional reaction in the forward blood group. This was a patient of Multiple Myeloma with hyperproteinemia and visible rouleaux formation.

## SUMMARY / CONCLUSIONS

The ABD PAD point of care blood group testing system is easy, quick and robust system for both donor as well as recipient blood group testing. The results are dependable in even complex immunohaematological scenarios and hence it can be utilized as a tool for immediate blood group testing at donation site, in serology laboratory as well as at patients' bedside.